

HIGH-SPEED OPTICAL MODULATOR

Abstract of the Disclosure

An optical modulator is constituted by a planar lightwave circuit incorporating a silicon waveguide (2) provided on a silica substrate (1). The silicon waveguide has a resonant cavity (5) formed therein. The resonant cavity (5) may conveniently be implemented as a periodic array of holes defining a photonic bandgap device. The waveguide may be a photonic crystal waveguide. An electric field is applied to the resonant cavity (5) in order to alter the Q-factor, and hence the transmission properties, thereof, either via the MOS effect or via alteration of the width of the depletion region of a p-n junction. A control unit (10) controls the voltage that is applied to the resonant cavity (5). and thus controls the modulation of light at the resonant frequency/frequencies of the cavity (5).